IN THE CLAIMS:

Please re-write the claims as follows:

1. (Currently Amended) A system for synchronizing dependencies upon a set of persistent consistency point images (PCPIs) among a set of computers, the system comprising:

means for identifying a dependency upon the set of PCPIs;

means for creating a set of soft locks, each soft lock in the set of soft locks associated with each of the PCPIs in the set of PCPIs; and

means for transmitting the set of soft locks upstream to one or more of the set of computers.

2. (Original) The system of claim 1 wherein the set of computers comprises a set of storage appliances.

3. (Original) The system of claim 1 wherein each soft lock comprises a PCPI identifier field, a type field and a string field.

4. (Original) The system of claim 3 wherein the string field comprises user visible information.

5. (Original) The system of claim 3 wherein the string field identifies an application that depends upon the PCPI associated with the soft lock.

6. (Original) The system of claim 3 wherein the type field identifies a type of data in the string field.

7. (Original) The system of claim 6 wherein the type of data comprises an owner name.

1   8. (Original) The system of claim 6 wherein the type of data comprises a destination

2   path.

1   9. (Original) The system of claim 6 wherein the type of data comprises a qtree name.

1   10. (Original) The system of claim 1 wherein the means for transmitting the set of soft

2   locks to one or more of the set of computers further comprises:

3   means for transmitting the set of soft locks before an asynchronous mirroring

4   process; and

5   means for transmitting the set of soft locks after an asynchronous mirroring proc-

6   ess.

1   11. (Currently Amended) A method for synchronizing dependencies upon a set of per-

2   sistent consistency point images (PCPIs) among a set of computers, comprising:

3   identifying a dependency upon the set of PCPIs;

4   creating a set of soft locks, each soft lock in the set of soft locks associated with

5   each of the PCPIs in the set of PCPIs; and

6   transmitting the set of soft locks upstream to one or more of the set of computers.

1   12. (Previously Presented) The method of claim 11 wherein the set of computers com-

2   prises a set of storage appliances.

1   13. (Previously Presented) The method of claim 11 wherein each soft lock comprises a

2   PCPI identifier field, a type field and a string field.

1   14. (Original) The method of claim 13 wherein the string field comprises user visible

2   information.

1 15. (Original) The method of claim 13 wherein the string field identifies an application

2 that depends upon the PCPI associated with the soft lock.

1 16. (Original) The method of claim 13 wherein the type field identifies a type of data in

2 the string field.

1 17. (Original) The method of claim 16 wherein the type of data comprises an owner

2 name.

1 18. (Original) The method of claim 16 wherein the type of data comprises a destination

2 path.

1 19. (Original) The method of claim 16 wherein the type of data comprises a qtree name.

1 20. (Previously Presented) The method of claim 11 wherein the step of transmitting the

2 set of soft locks to one or more of the set of computers further comprises:

3   transmitting the set of soft locks before an asynchronous mirroring process; and

4   transmitting the set of soft locks after an asynchronous mirroring process.

1 21. (Currently Amended) A storage system for use in a storage system environment for

2 communicating dependencies upon a set of persistent consistency point images (PCPIs)

3 among a set of storage systems, the storage system comprising:

4   a storage operating system having a file system that implements PCPIs;

5   an application executing on the storage system, the application adapted to imple-

6 ment a soft lock to communicate a dependency with a specific PCPI; and

7   a network protocol module of the storage operating system, the network protocol

8 module operatively interconnected with the application and adapted to transfer the soft

9 lock to one or more upstream storage systems in the set of storage systems.

1   22. (Original) The storage system of claim 21 wherein the application comprises an

2   asynchronous mirroring application.

1   23. (Original) The storage system of claim 21 wherein the soft lock comprises a PCPI

2   identifier field, a type field, and a string field.

1   24. (Original) The storage system of claim 23 wherein the string field comprises user

2   visible information.

1   25. (Original) The method of claim 23 wherein the string field identifies an application

2   that depends upon the PCPI associated with the soft lock.

1   26. (Original) The method of claim 23 wherein the type field identifies a type of data in

2   the string field.

1   27. (Original) The method of claim 26 wherein the type of data comprises an owner

2   name.

1   28. (Original) The method of claim 26 wherein the type of data comprises a destination

2   path.

1   29. (Original) The method of claim 26 wherein the type of data comprises a qtree name.

1   30. (Previously Presented) A method for propagating soft locks through a cascaded

2   chain of storage systems comprising at least a downstream storage system and an up-

3   stream storage system, comprising:

4   identifying a set of persistent consistency point images on the upstream storage

5   system that require a soft lock to be set;

6   creating soft locks for the identified set of persistent consistency point images;

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7   sending the created soft locks to the upstream storage system; and

8   performing an asynchronous mirroring process to mirror local data to the down-

9   stream storage system.

1   31. (Previously Presented) The method of claim 30 further comprising:

2   determining if a new persistent consistency point image exist on the downstream

3   storage system;

4   identifying, in response to a new persistent consistency image existing on the

5   storage system, a set of additional soft locks on the downstream storage system; and

6   sending the additional set of soft locks to the upstream storage system.

1   32. (Original) The method of claim 30 wherein the soft lock comprises a data structure

2   having an entry identifying a resource identifier and an identifier of a locking data set.

1   33. (Original) The method of claim 32 wherein a resource identifier identifies a persis-

2   tent consistency point image that the soft lock protects.

1   34. (Original) The method of claim 32 wherein the identifier of a locking dataset identi-

2   fies a resource on a downstream system that requires the use of the persistent consistency

3   point image identified in the resource identifier.

1   35. (Previously Presented) The method of claim 30 wherein the step of identifying a set

2   of persistent consistency point images on the upstream storage system that requires a soft

3   lock to be set further comprises:

4   identifying a set of persistent consistency point images that are in common be-

5   tween the upstream storage system and the downstream storage system; and

6   identifying a set of persistent consistency point images that have a soft lock set

7   from one or more storage systems located downstream from the downstream storage sys-

8   tem.

1   36. (Original) The method of claim 30 wherein the downstream storage system com-

2   prises a storage system to which mirrored data is transferred.

1   37. (Original) The method of claim 30 wherein the upstream storage system comprises a

2   storage system from which mirrored data is transferred.

1   38. (Original) A cascaded set of storage systems interconnected via one or more net-

2   works, each of the storage systems comprising:

3   a storage operating system executing, the storage operating system including a

4   mirroring application adapted to create and maintain soft locks on the storage systems of

5   the cascaded set of storage systems.

1   39. (Original) The cascaded set of storage systems of claim 38 wherein the mirroring ap-

2   plication implements a volume-based asynchronous mirroring process.

1   40. (Original) The cascaded set of storage systems of claim 38 wherein the mirroring ap-

2   plication implements a qtree-based asynchronous mirroring process.

1   41. (Original) The cascaded set of storage systems of claim 38 wherein each of the soft

2   locks comprises a data structure having an entry defining a resource identifier and an en-

3   try identifying a locking dataset.

1   42. (Original) The cascaded set of storage systems of claim 38 wherein the mirroring ap-

2   plication is further adapted to propagate the soft locks to one or more of the storage sys-

3   tems in the cascaded set of storage systems.

1   43. (Original) A storage system for use in a cascaded set of storage systems having at

2   least an upstream storage system, the storage system comprising:

3   means for identifying a set of persistent consistency point images on the upstream

4   storage system that require a soft lock to be set;

5   means for creating soft locks for the identified set of persistent consistency point

6   images; and

7   means for sending the created soft locks to the upstream storage system.

1   44. (Original) The storage system of claim 43 further comprising means for performing

2   an asynchronous mirroring process to mirror local data to a downstream storage system.

1   45. (Original) The storage system of claim 44 wherein the storage system is operatively

2   interconnected with the downstream storage system via a network.

1   46. (Original) The storage system of claim 44 wherein the storage system is connected to

2   the upstream storage system and the downstream storage system via a network.

1   47. (Original) The storage system of claim 43 further comprising means for performing

2   an asynchronous mirroring process to mirror local data to the downstream storage sys-

3   tem.

1   48. (Original) A computer readable medium, including program instructions executing

2   on a storage system in a cascaded set of storage systems having at least an upstream stor-

3   age system and a downstream storage system, the computer readable medium including

4   instructions for performing the steps of:

5   identifying a set of persistent consistency point images that are in common be-

6   tween the upstream storage system and the downstream storage system; and

7   identifying a set of persistent consistency point images that have a soft lock set

8   from one or more storage systems located downstream from the downstream storage sys-

9   tem;

10   creating soft locks for the identified set of persistent consistency point images;

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11   sending the created soft locks to the upstream storage system; and

12   performing an asynchronous mirroring process to mirror local data to the down-

13   stream storage system.

1   49. (Original) The computer readable medium of claim 19 wherein local data comprises

2   data stored on storage devices associated with a storage system executing the computer

3   readable medium.

1   50. (Currently Amended) A method for synchronizing persistent consistency point im-

2   ages among a plurality of computers, comprising:

3   identifying a set of persistent consistency point images on a first computer of the

4   plurality of computers;

5   creating soft locks for the identified set of persistent consistency point images; and

6   sending the created soft locks upstream to the plurality of computers.

1   51. (Previously Presented) The method of claim 50 wherein , in the identifying step, the

2   set of persistent consistency point images is identified, in the identifying step, on an up-

3   stream storage system of the plurality of computers.

1   52. (Previously Presented) The method of claim 50 wherein, in the sending step, the cre-

2   ated soft locks are sent, to an upstream storage system of the plurality of computers.

1   53. (Previously Presented) The method of claim 50 wherein, in the identifying step, per-

2   sistent consistency point images that require a soft lock to be set are identified.

1   54. (Previously Presented) The method of claim 50 further comprising:

2   performing an asynchronous mirroring process to mirror local data to a selected

3   computer of the plurality of computers, the soft locks maintaining consistency of the data

4   on the plurality of computers.

1   55. (Previously Presented) The method of claim 54 wherein, in the mirroring step, the

2   local data is mirrored to a down stream storage system of the plurality of computers.

1   56. (Previously Presented) A method of synchronizing dependencies upon a set of per-

2   sistent consistency point images, comprising:

3   identifying a set of persistent consistency point images that are in common be-

4   tween an upstream storage system and a downstream storage system; and

5   identifying a set of persistent consistency point images that have a soft lock set

6   from one or more storage systems located downstream from the downstream storage sys-

7   tem;

8   creating soft locks for the identified set of persistent consistency point images;

9   and

10   sending the created soft locks to the upstream storage system.

1   57. (Previously Presented) The method of claim 56 further comprising:

2   performing an asynchronous mirroring process to mirror local data to the down-

3   stream storage system.

1   58. (Previously Presented) A system for synchronizing dependencies upon a set of per-

2   sistent consistency point images, comprising:

3   means for identifying a set of persistent consistency point images that are in

4   common between an upstream storage system and a downstream storage system; and

5   means for identifying a set of persistent consistency point images that have a soft

6   lock set from one or more storage systems located downstream from the downstream

7   storage system;

8   means for creating soft locks for the identified set of persistent consistency point

9   images; and

10   means for sending the created soft locks to the upstream storage system.

1   59. (Previously Presented) The system according to claim 58 further comprising:

2   means for performing an asynchronous mirroring process to mirror local

3   data to the downstream storage system.

1   60. (Previously Presented) A computer data storage system cluster comprising:

2   a primary storage system including an active file system;

3   a persistent consistency point image (PCPI) consisting of a point-in-time

4   image of the active file system;

5   at least one mirror image of the PCPI, the mirror image being stored on a

6   downstream storage system; and

7   at least one soft lock issued by the downstream storage system in response

8   to an application being dependent upon the PCPI, the soft lock consisting of a data

9   structure configured to prevent changes to the PCPI.

1   61. (Previously Presented) The computer data storage system cluster of claim 60

2   comprising:

3   a cascade of mirrored images of the PCPI stored on a plurality of data

4   storage systems in the cluster; and

5   wherein the at least one soft lock comprises a set of soft locks that are

6   communicated from downstream storage systems in the cluster to upstream stor-

7   age systems in the cluster.

1   62. (Previously Presented) The computer data storage system cluster of claim 60

2   comprising:

3   wherein the soft lock is transmitted from the downstream storage system

4   to the primary storage system over a data link.

1   63. (Previously Presented) The computer data storage system cluster of claim 60

2   comprising:

3   a field in the soft lock storing data identifying an owner of the soft lock

4   wherein the owner comprises the application being dependent upon the PCPI.

1   64. (Previously Presented) A method of managing data on a cluster of computer

2   data storage systems, the method comprising:

3   writing a persistent consistency point image (PCPI) on a primary storage

4   system, the PCPI consisting of a point-in-time image of an active file system op-

5   erating on the primary storage system;

6   writing at least one mirror image of the PCPI on a downstream storage

7   system; and

8   issuing at least one soft lock by the downstream storage system in re-

9   sponse to an application being dependent upon the PCPI, the soft lock consisting

10   of a data structure configured to prevent changes to the PCPI.

1   65. (Previously Presented) The method of claim 64 comprising:

2   writing a cascade of mirrored images of the PCPI on a plurality of data

3   storage systems in the cluster; and

4   wherein the at least one soft lock comprises a set of soft locks that are

5   communicated from downstream storage systems in the cluster to upstream stor-

6   age systems in the cluster,

1   66. (Previously Presented) The method of claim 64 comprising:

2   transmitting the soft lock from the downstream storage system to the pri-

3   mary storage system over a data link.

1   67. (Previously Presented) The method of claim 64 comprising:

2   storing data in the soft lock, the data identifying an owner of the soft lock

3   wherein the owner comprises the application being dependent upon the PCPI.

1   68. (Previously Presented) A computer readable medium, including program in-

2   structions executing on a storage system in a cascaded set of storage systems hav-

3   ing at least an upstream storage system and a downstream storage system, the

4   computer readable medium including instructions for performing the steps of:

5   writing a persistent consistency point image (PCPI) on a primary storage

6   system, the PCPI consisting of a point-in-time image of an active file system op-

7   erating on the primary storage system;

8   writing at least one mirror image of the PCPI on a downstream storage

9   system; and

10   issuing at least one soft lock by the downstream storage system in re-

11   sponse to an application being dependent upon the PCPI, the soft lock consisting

12   of a data structure configured to prevent changes to the PCPI.

1   69. (Previously Presented) A computer data storage system cluster comprising:

2   means for writing a persistent consistency point image (PCPI) on a pri-

3   mary storage system, the PCPI consisting of a point-in-time image of an active

4   file system operating on the primary storage system;

5   means for writing at least one mirror image of the PCPI on a down-

6   stream storage system; and

7   means for issuing at least one soft lock by the downstream storage sys-

8   tem in response to an application being dependent upon the PCPI, the soft lock

9   consisting of a data structure configured to prevent changes to the PCPI.

1   70. (New) The system of claim 1 further comprising:

2   means for transmitting the set of soft locks downstream to the one or

3   more of the set of computers.

1   71. (New) The method of claim 11 further comprising:

2   transmitting the set of soft locks downstream to the one or more of the

3   set of computers.

1   72. (New) The system of claim 21 wherein the network protocol module is fur-

2   ther adapted to transfer the soft lock to one or more downstream storage systems

3   in the set of storage systems.

1   73. (New) The method of claim 43 further comprising:

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2   means for identifying a separate set of persistent consistency point im-

3   ages on the downstream storage system that require a separate soft lock to be

4   set;

5   means for creating the separate soft locks for the identified separate set

6   of persistent consistency point images; and

7   means for sending the created separate soft locks to the downstream

8   storage system.

1   74. (New) The method of claim 50 further comprising:

2   sending the created soft locks downstream to the plurality of computers.

1   75. (New) The method of claim 56 further comprising:

2   sending the created soft locks to the downstream storage system.

1   76. (New) The system of claim 58 further comprising:

2   means for sending the created soft locks to the downstream storage sys-

3   tem.

1   77. (New) The computer readable medium of claim 68 further comprising:

2   writing at least one mirror image of the PCPI on an upstream storage

3   system; and

4   issuing at least one soft lock by the upstream storage system in response

5   to an application being dependent upon the PCPI, the soft lock consisting of a

6   data structure configured to prevent changes to the PCPI.

1   78. (New) The computer readable medium of claim 69 further comprising:

2   means for writing at least one mirror image of the PCPI on an upstream

3   storage system; and

4   means for issuing at least one soft lock by the upstream storage system

5 in response to an application being dependent upon the PCPI, the soft lock con-

6 sisting of a data structure configured to prevent changes to the PCPI.